Moab UMTRA

Uranium Mill Tailings Remedial Action

January 2020

Container truck approaching Crescent Junction dumping area with UMTRA train in background.

MTPSC Status Update

by Russ von Koch
Grand County UMTRA Liaison

Highlights

- Continued 4 trains per week to CJ
- Oct 92.9 k tons, Nov 68 k tons & Dec 58k tons
- Moved 64% of est. total tonnage
- Maintenance performed over 2019/ 2020 holiday period (no trains)

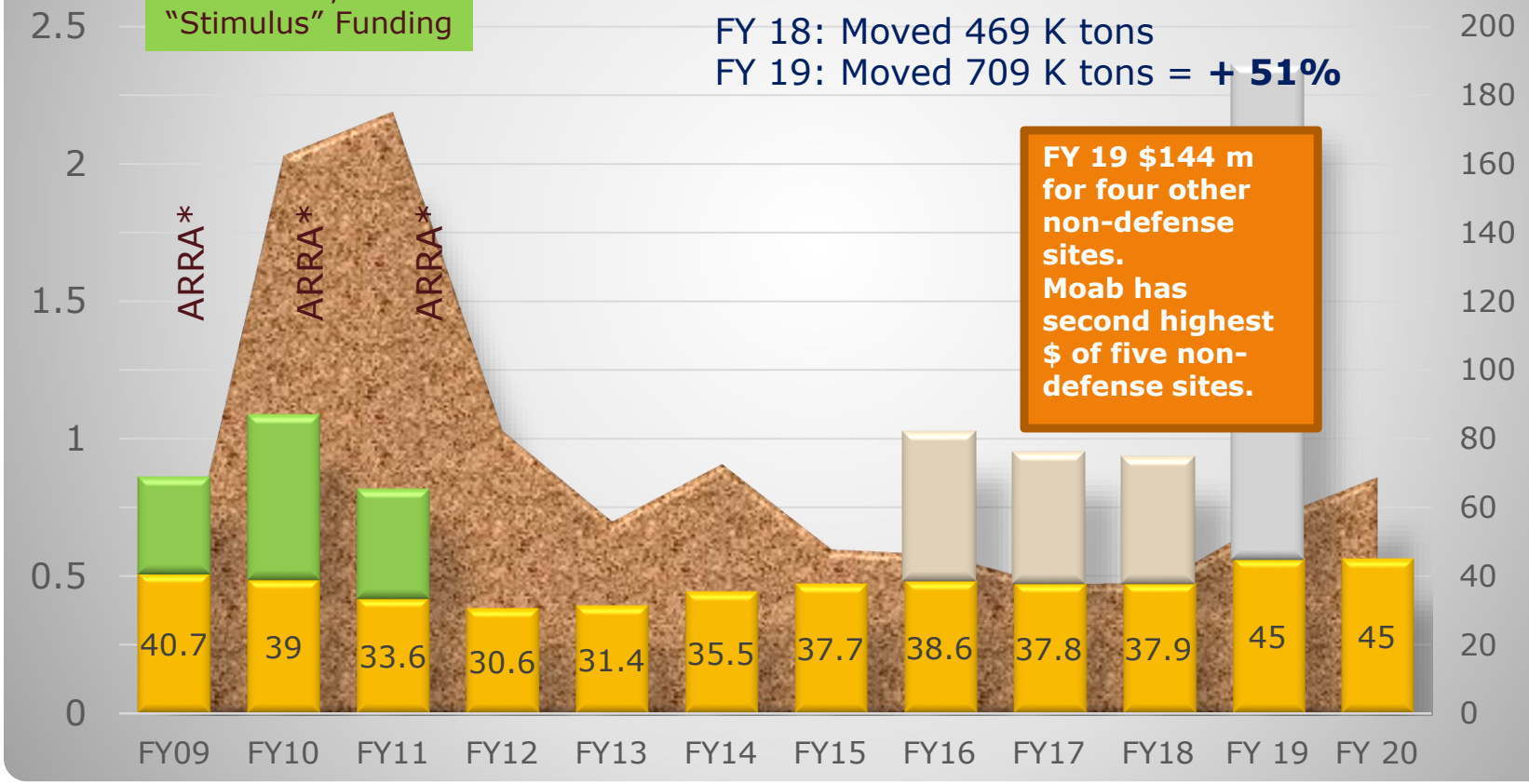
Observations provided by Grand County UMTRA Liaison on behalf of the Moab Tailings Project Steering Committee, as established by Grand County Resolution 3198.

Tailings Removed & Budget History

(Millions of Tons & Dollars per Year)

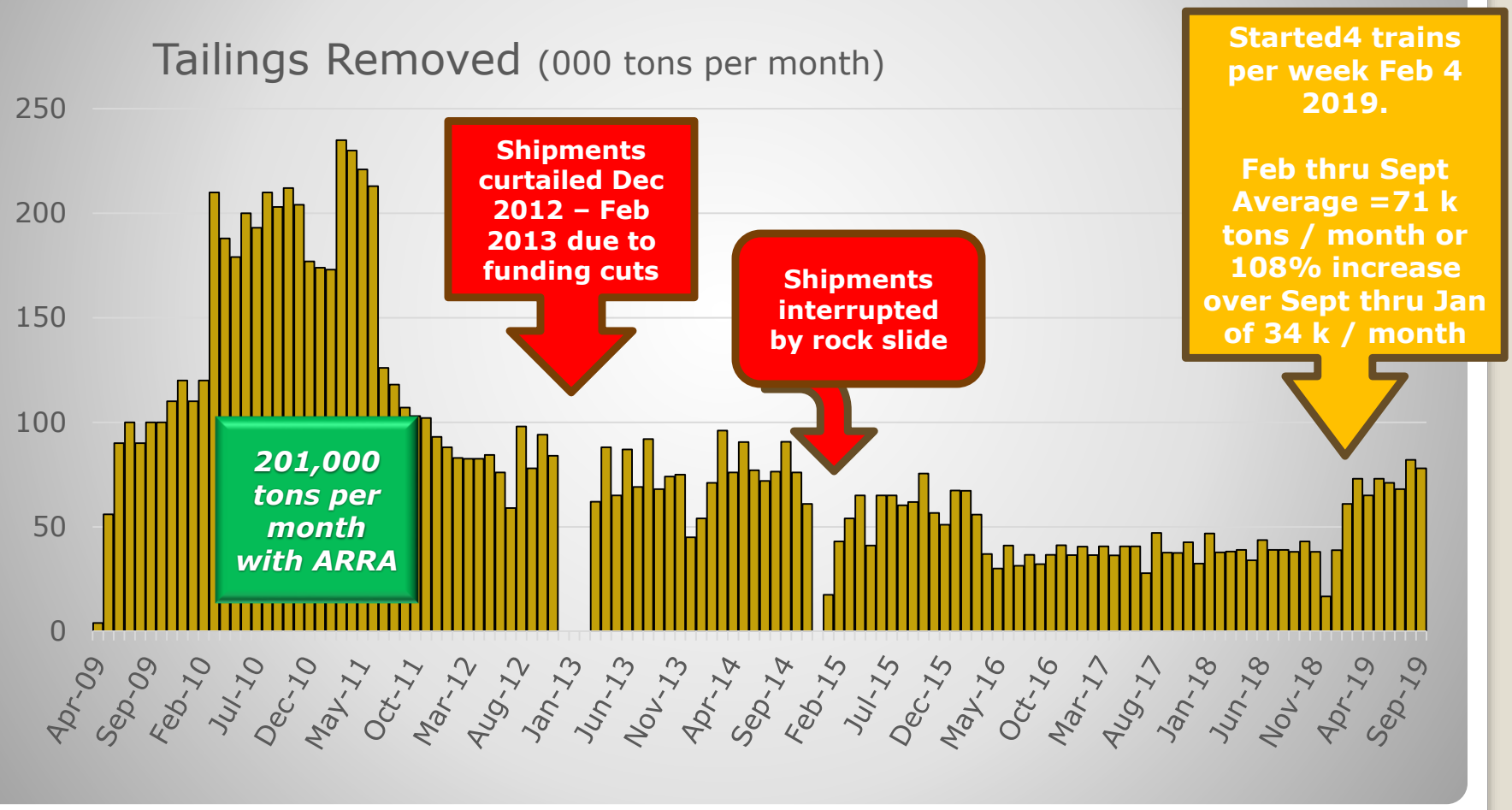
* American Recovery and Reinvestment Act of 2009, aka "Stimulus" Funding

Moab Regular Funding
(Million $)



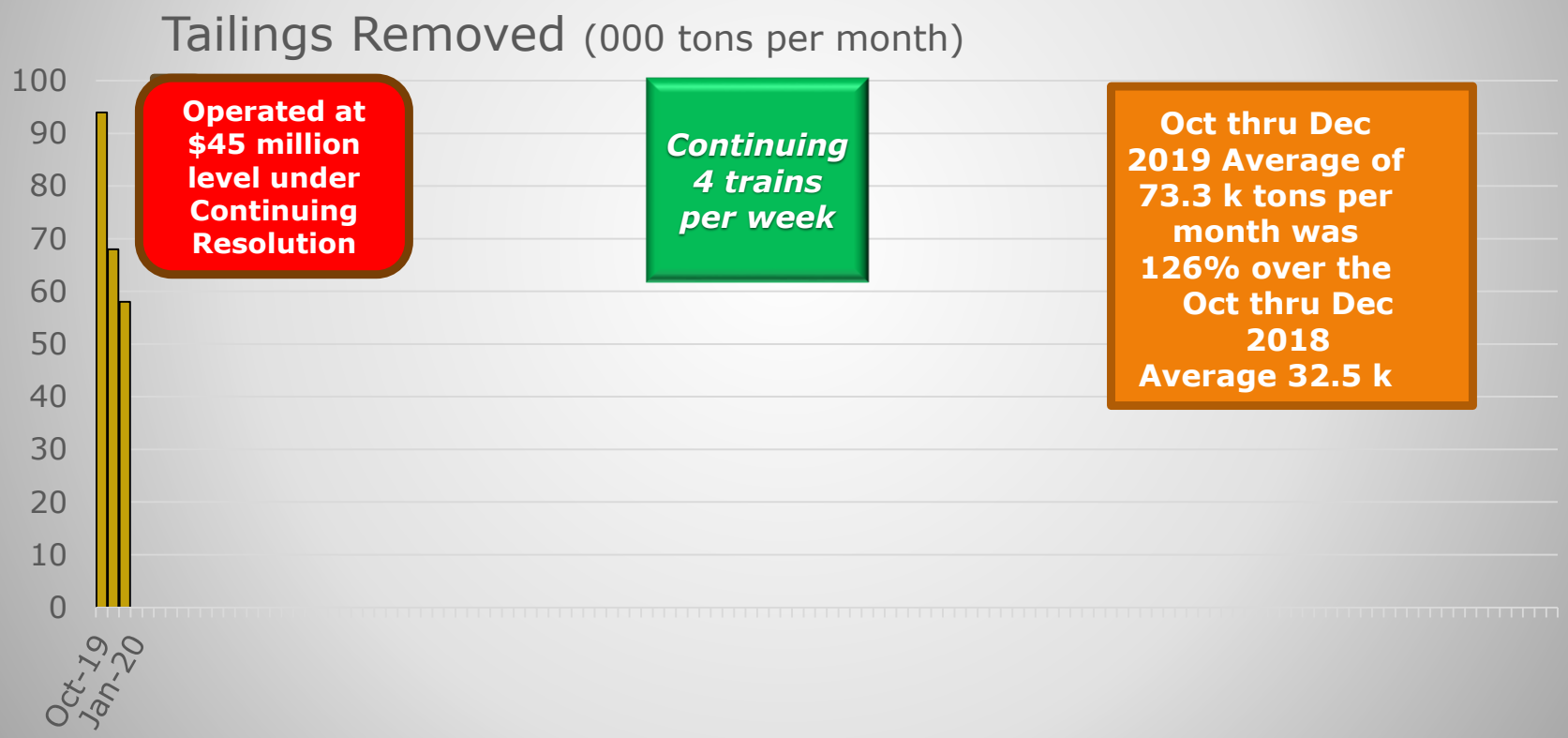
Tailings shipment and funding information provided by Moab UMTRA. Other observations provided by Grand County UMTRA Liaison on behalf of the Moab Tailings Project Steering Committee, as established by Grand County Resolution 3198. * ARRA $ all came in FY09. **Liaison estimated FY20 tonnage at 862,000 tons by combining CY 19 and FY 20 months.**

Monthly Tonnage Shipments Slide 1 of 2
April 09 through September 2019



Tailings shipment and funding information provided by Moab UMTRA. Other observations provided by Grand County UMTRA Liaison on behalf of the Moab Tailings Project Steering Committee, as established by Grand County Resolution 3198.

- **Monthly Tons Slide 2 of 2 (Oct 2019 →)**
- **October Tonnage of 92,978**
- **Highest Since September 2014**



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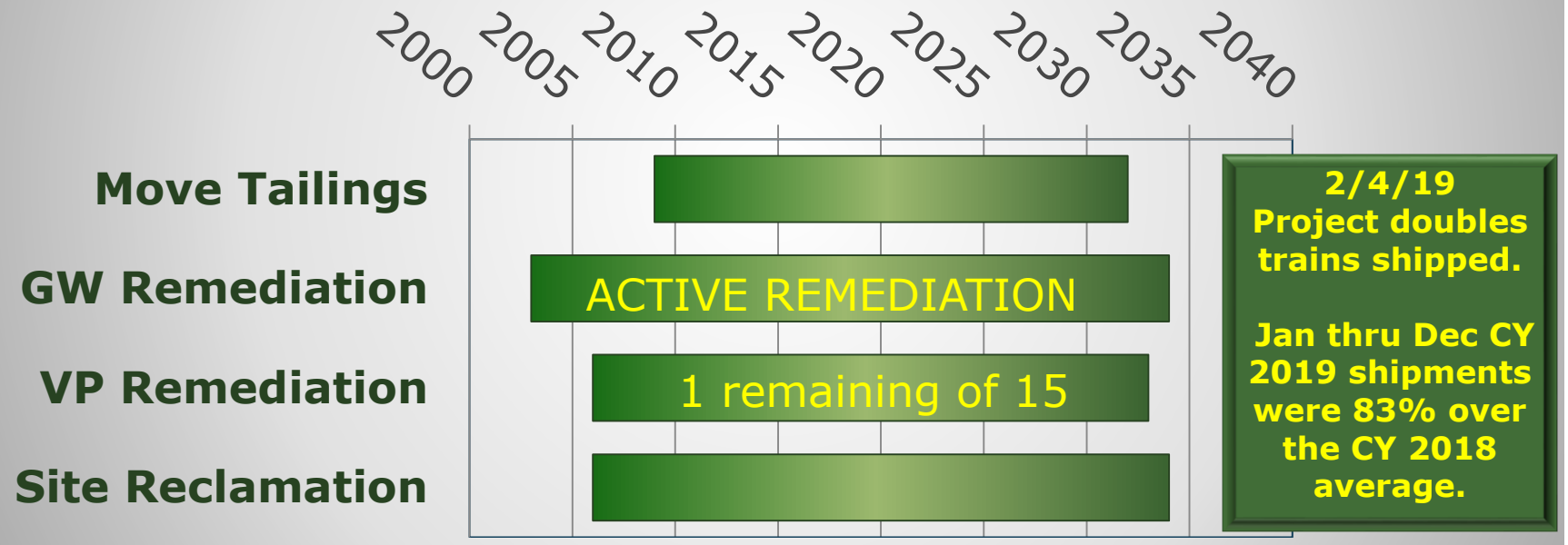
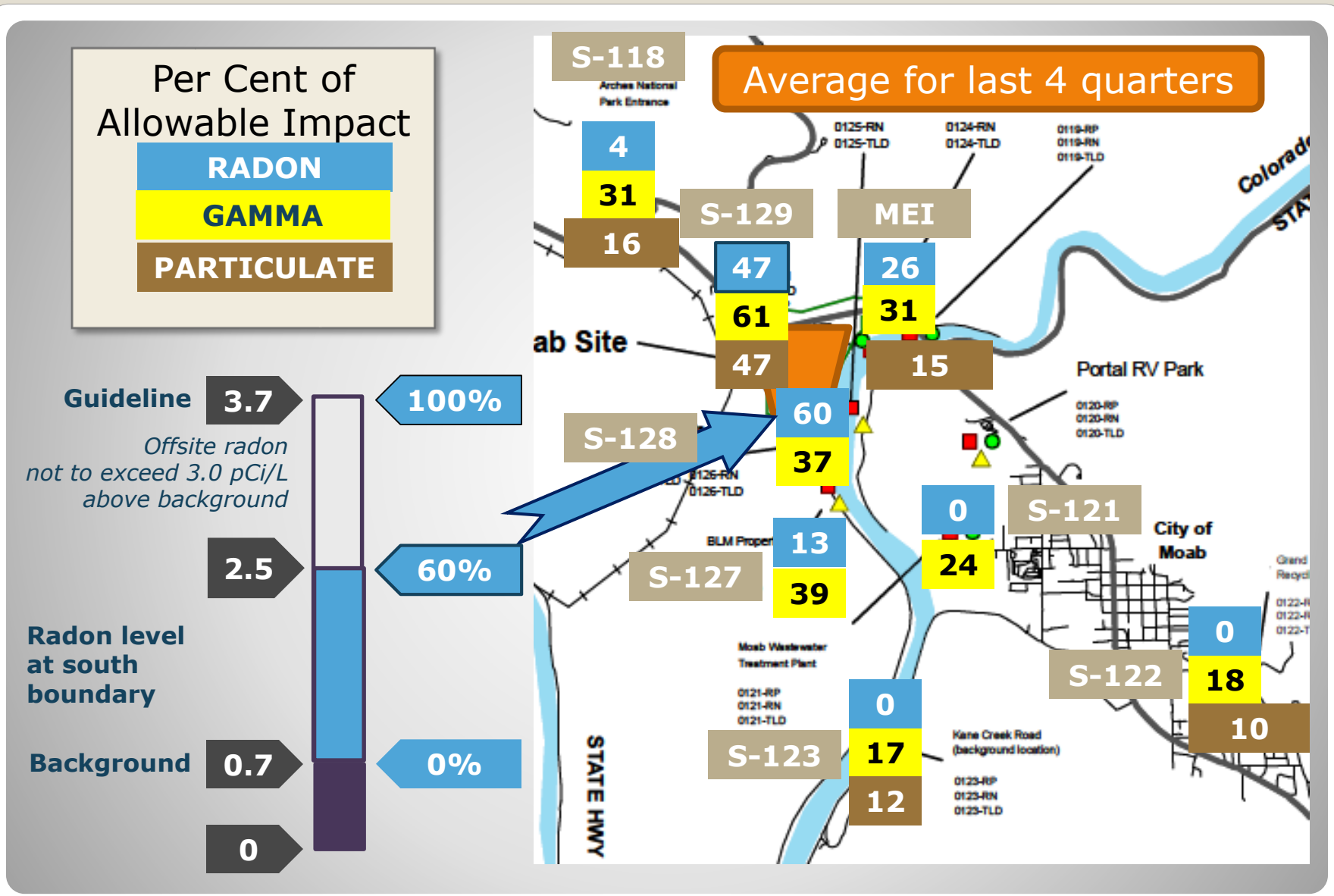
Main Project Goals

- Move tailings away from Colorado River
- Protect river by intercepting ground water contaminants
- Remediate vicinity properties (VP)
- Reclaim project sites at Moab and Crescent Junction



CY18 tons (451.8) averaged 37.7 K /month
CY19 tons (829.8) averaged 69.1 K /month



Impacts Around Moab: 18Q4-19Q3

pCi/L = picoCuries per Liter, radiation from Radon gas in the air, L4Q average

Impacts Around CJ: 18Q4-19Q3

Per Cent of Allowable Impact

RADON

GAMMA

PARTICULATE

mREM

192

100%

Gamma Guideline

120

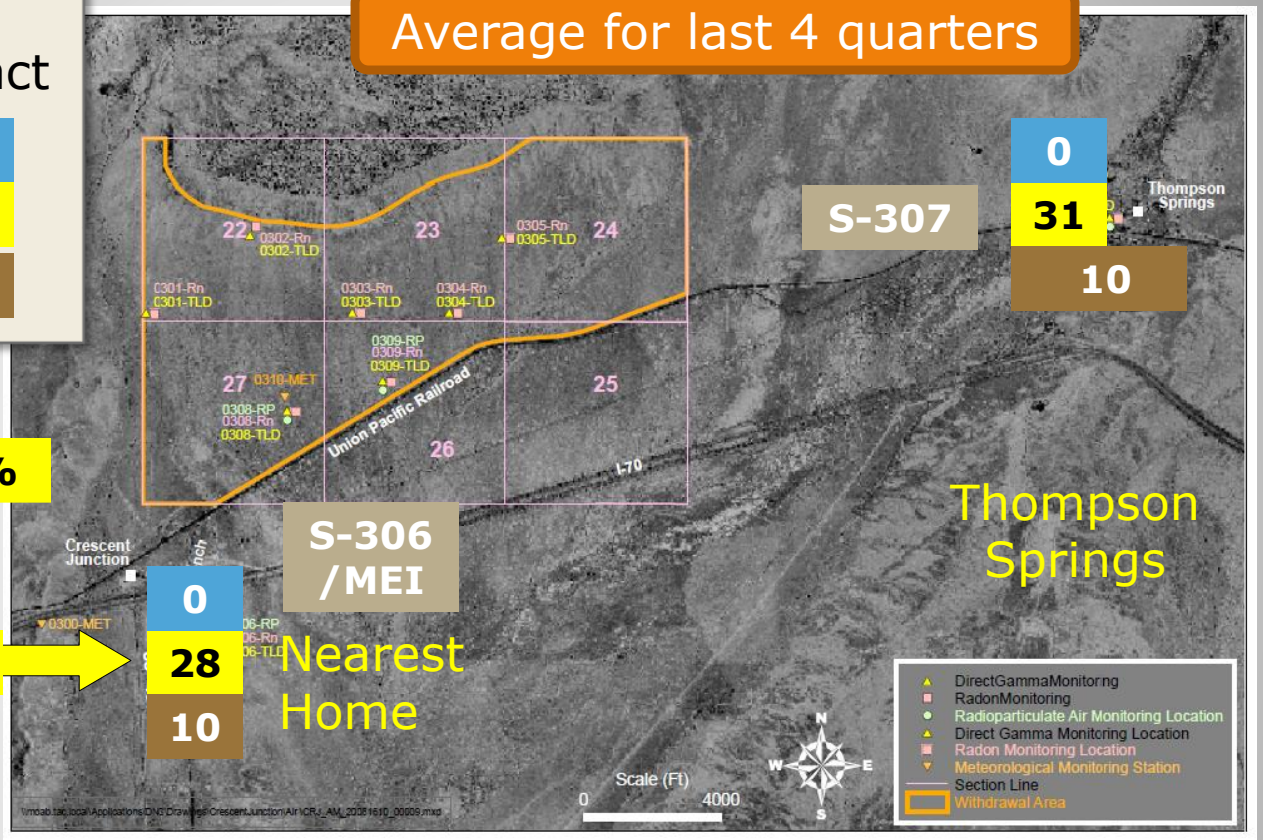
28%

0%

Background 92 mREM in CJ area

0

Average for last 4 quarters



Guideline: Gamma not to exceed 100 mREM/yr above background.
Gamma total for last 12 months at nearest home was 120 mREM, or 28% above CJ background of 92 mREM.

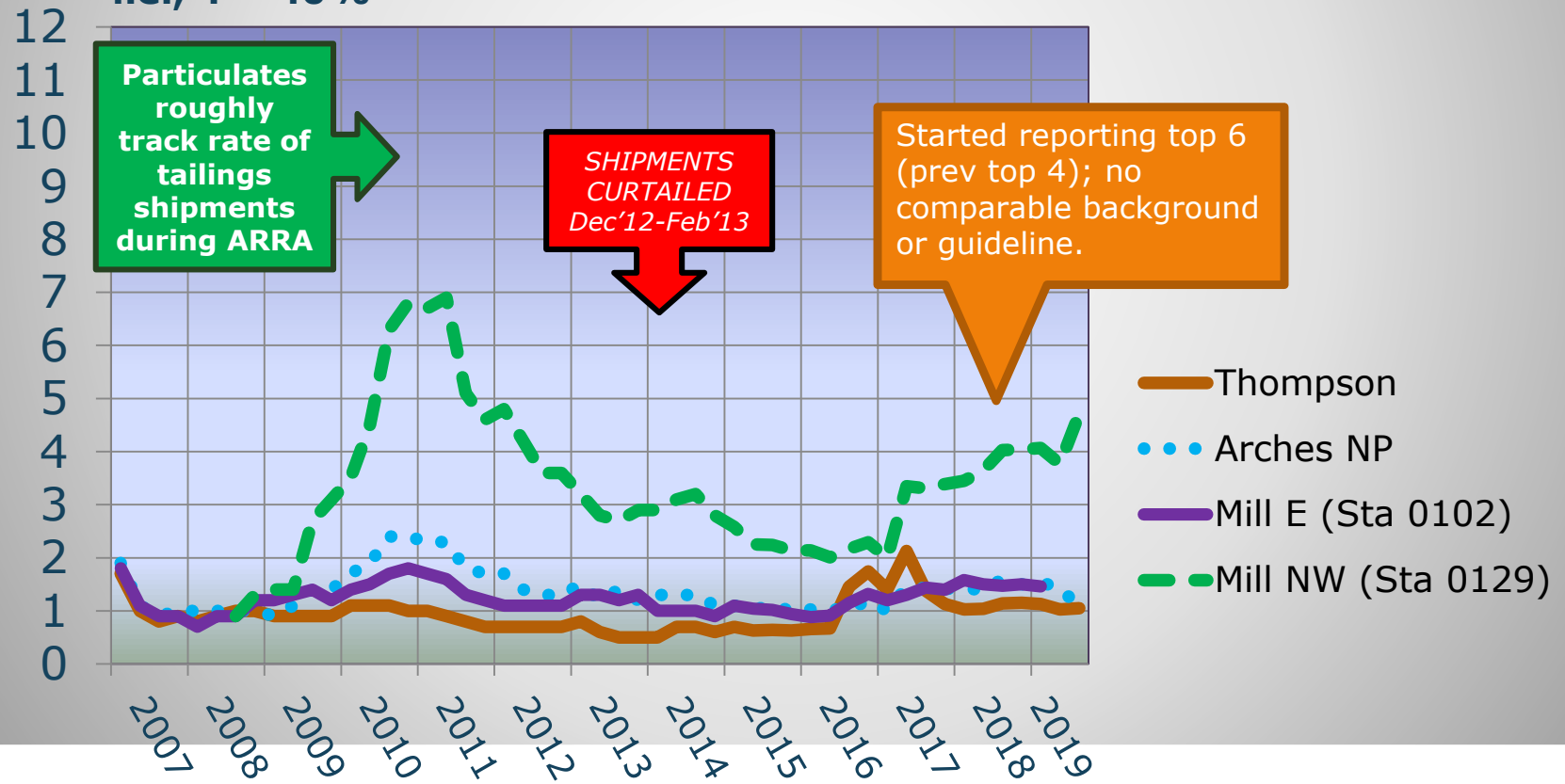
mREM = milli-Roentgen Equivalents in Man, biological dose equivalent, sum of L4Q

Airborne Radioparticulates

Total DCG for 18Q4 – 19Q3

Total mREM L4Q multiple vertical axis by 10 to convert to % of alim. i.e., 4 = 40%

DCG = Derived Concentration Guideline, a calculated estimate of radiation levels from radioparticulates



Environmental monitoring data provided by Moab UMTRA. Other observations provided by Grand County UMTRA Liaison on behalf of the Moab Tailings Project Steering Committee, as established by Grand County Resolution 3198.

Ground Water Remediation

Project totals of
over 930,000 pounds of ammonia
& more than 5,100 pounds uranium
extracted through Sept, 2019
(kept out of river)

- Extraction wells between pile and river intercept contaminated ground water
- Fresh water "curtain" injected when river is low
- Side channel habitat protected seasonally with added fresh water
- Suspended during CO River Flooding

- ACTIVE ground water remediation could continue 1-2 years after pile removed. Supplemental standards may be applied for PASSIVE remediation.

Well field data provided by Moab UMTRA. Other observations provided by Grand County UMTRA Liaison on behalf of the Moab Tailings Project Steering Committee, as established by Grand County Resolution 3198.

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Moab Activity

Loading RRM near top of the pile.

Lowering the top of the pile is opening the view.

Hauling RRM from the upper pile to the conditioning beds.

Going back for more.

Building RRM conditioning area near container transfer area.

(Close proximity facilitates winter loading)

"Odoriferous" area "re-furrowed" for testing and venting.

(Dec. 13, 2019)

South end was "re-furrowed" to help vent area.

(Dec. 16, 2019)

“Re-furrowed” tailings face for venting of fumes. Lateral routes are for testing access.

Jan. 15 2020

Loading RRM from conditioning bed near container transport area reduces winter transport distance.

Snow & mud → difficult conditions for container transfer.

Crescent Junction
RRM Transport & Placement Overview

- Move sealed containers at rail bench from train to haul trucks.
- "End dump" containers into regular RRM area or into debris area side.
- Wash any residual debris from exterior of containers.
- Load RRM (or RRM/debris) for transport to disposal position within the cell.
- Doze, mix, and compact RRM into 1 foot or 2 foot lifts as necessary.
- Repeat above until compacted RRM layer reaches level for placement of interim cover.

Unloading containers at CJ Rail bench.

Unloading regular RRM on the east side main dumping ramps. There is also a north side ramp for mixed debris /RRM.

The ramps are moved east as the cell is filled from west to east.

Spraying container exterior at dumping area to remove any residual RRM prior to the return trip to Moab.

Loading Empty Containers at the rail bench for transport back to Moab.

Loading RRM dumped from the containers for transport to a disposal site with the cell.

These loaders and trucks stay in the contaminated area.

Another view of loading RRM in the cell.

Note height of filled cell to the west.

Transporting RRM to a compaction area.

Dozer operator will blade dumped RRM piles prior to compaction.

Transporting RRM to another compaction Area.

Note massive surface water flow protection wedge in background above cell.
Note access road to the top of wedge shown in the upper right for scale.

Dumping & Compacting RRM over Mill Debris.

In this area, the Mill Debris is the lowest layer below the compacted RRM.

Crescent Junction Cell Excavation and Interim Cover Placement Overview

- Excavate clean fill for interim cover from future cell location at east end of operational area.
- Haul and dump fill for interim cover at clean edge of previously placed cover.
- Push material for interim cover over RRM without contacting RRM with equipment.
- Repeat as necessary and grade to extend the working edge of interim cover.
- Repeat as the interim cover is expanded.

Combined source and loading site for interim cover material.

Excavating interim cover material from this location adjacent to the current operations area helps form the next RRM disposal cell.

Loading interim cover material for transport to “filled” part of the disposal cell.

Hauling clean material for use as interim cover.

Note use of higher capacity container in lieu of regular dump bed.

Dust control water truck along interim cover haul route.

CJ Water loading area below water reservoir.

Dumping material for interim cover near edge of the RRM.

The grader will push the piles of interim cover over the uncovered RRM.

The RRM is the light-colored material beyond grader and piles.

A view of the working edge of interim cover over multiple layers of compacted RRM.

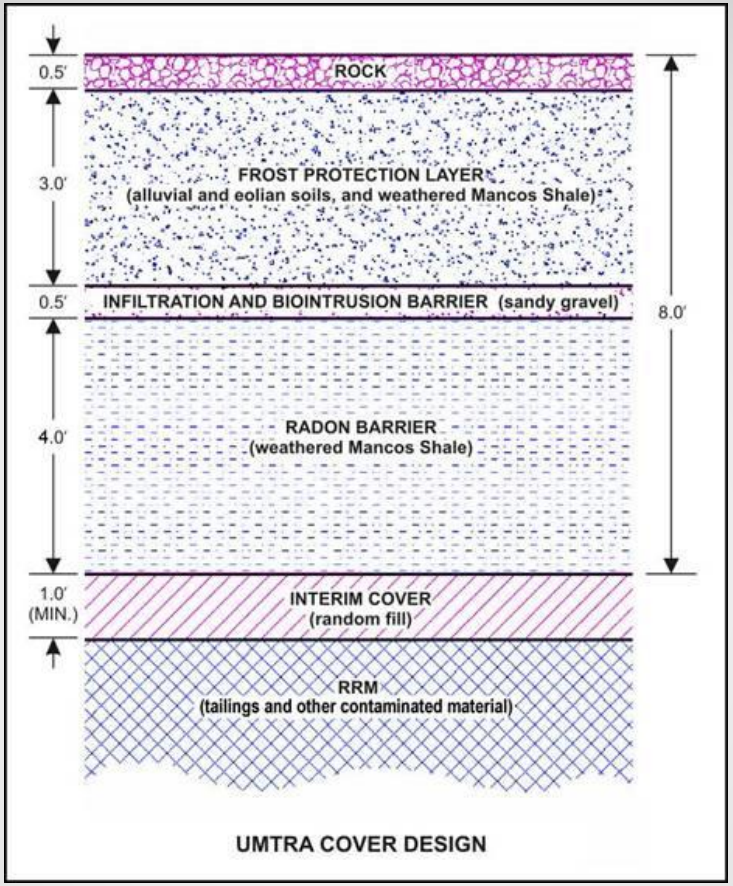

Diagram of standard NRC tailings cover.

The interim cover is the second layer from the bottom.

Top of rock-capped standard NRC tailings cover.

Looking up the slope of the standard NRC rock-capped top cover.

East end of south side of rock-capped section looking east with interim cover beyond.

View looking toward rock-capped cover on left and interim cover on right.

The Project has initiated consideration of an alternative to the standard design.

Winter loading conditions at CJ

Reduced Winter Work Area at CJ

To Learn More

- **Online**
  - https//gjem.energy.gov/moab/
  - GrandCountyUtah.net ("Moab UMTRA Project")
- **Public meetings**
  - *Moab Tailings Project Steering Committee, quarterly (Jan 28, May 26, July 28 and Oct 27, 2020)*
  - *Site Futures Committee, 2013 and 2018*
- **UMTRA Reading Room (Library)**
- **Chat with Grand County's Liaison**
  - 259-1795 (normally at courthouse Tue, Thu)
  - rvonkoch@grandcountyutah.net